PhD school in Civil, Architectural and Environmental Science

Advanced soil mechanics course (18h)

Program

1. Introduction on modelling in geomechanics (1h, Ceccato)
2. Matematical models (2h, Ceccato)
   a. Governing equations of 1phase continua
   b. 2phase and 3phase formulations
   c. Thermo-chemical coupling
3. Discretization strategies (2h, Ceccato)
   a. Overview of numerical methods (mesh and meshless)
   b. Basic concepts of MPM
4. Exercise (4h, Ceccato)
   a. Tutorial on use of MPM software (Anura3D)
5. Introduction to discrete element method (1h, Gabrieli)
6. DEM theory/background overview (3h, Gabrieli):
   a. Contact detection and contact mechanics
   b. Rigid body dynamics and time integration
   c. From micro to macro: basic concepts
7. Applications (1h, Gabrieli)
8. DEM scripting languages and exercises (Matlab, Python, Yade) (4h, Gabrieli)

For the practical sessions (exercises), please bring your laptop pc with Matlab and VMware Workstation Player 12 (ver. 12.5.4) installed.